MYCOTAXON

ISSN (print) 0093-4666 (online) 2154-8889 Mycotaxon, Ltd. ©2018

January–March 2018—Volume 133, pp. 63–69

https://doi.org/10.5248/133.63

Castanediella diversispora sp. nov. from the Brazilian Atlantic Forest

Phelipe M.O. Costa[1], Marcela A. Barbosa[2], Gabriela V.R. Da Silva[2], Daynet Sosa[3, 4], Simón Pérez-Martinez[4], Rafael F. Castañeda-Ruiz[5], Elaine Malosso[1*]

[1] *Centro de Biociências, Departamento de Micologia &*
[2] *Programa de Pós-Graduação em Biologia de Fungos,*
Universidade Federal de Pernambuco, Avenida da Engenharia,
s/n Cidade Universitária, Recife, PE, 50.740-600, Brazil
[3] *Escuela Superior Politécnica del Litoral, ESPOL, (CIBE),*
Campus Gustavo Galindo Km. 30.5 Vía Perimetral,
P.O. Box 09-01-5863, Guayaquil, Ecuador
[4] *Universidad Estatal de Milagro (UNEMI), Facultad de Ingenieria,*
Cdla. Universitaria Km. 1.5 vía Milagro-Km26. Milagro 091706, Guayas, Ecuador
[5] *Instituto de Investigaciones Fundamentales en Agricultura (INIFAT),*
Tropical 'Alejandro de Humboldt', OSDE, Grupo Agrícola,
Calle 1 Esq. 2, Santiago de Las Vegas, C. Habana, Cuba, C.P. 17200

* Correspondence to: *elaine.malosso@ufpe.br*

Abstract—*Castanediella diversispora*, collected from decaying leaves of an unidentified plant in Pernambuco state, Brazil, is described and illustrated as a new species characterized by three conidial morphologies: i) cylindrical, with both ends uncinate, ii) cylindrical to subacerose with an uncinate apex and attenuated base, iii) and long filiform with an obtuse apex and attenuated base. A key to *Castanediella* species is provided.

Key words—asexual ascomycete, hyphomycete, taxonomy, tropical fungi

Introduction

The Brazilian Atlantic Forest, regarded as the oldest Brazilian forest, is considered a complex biome that contains a species' diversity higher than most Amazon forests and with extremely high levels of endemism (Colombo & Joly 2010, Rizzini 1997). Several studies in the forest have revealed novel taxa and new records of conidial fungi (Barbosa & al. 2016, Costa & al. 2016a,b, Marques & al. 2008, Oliveira & al. 2015). During a mycological survey of microfungi associated with leaf litter in the Brazilian Atlantic Forest, we collected a striking fungus that is described as a new *Castanediella* species.

Materials & methods

Individual collections were placed in plastic bags, taken to the laboratory, and treated according to Castañeda-Ruiz & al. (2016). Mounts were prepared in lactic acid (90%) or (following Carmichael 1955) polyvinyl alcohol-glycerol (8 g PVA in 100 mL of water + 5 mL of glycerol) and lactofuchsin (0.1 g acid fuchsin, 100 mL 85% lactic acid). Microscopical characters were measured at ×1000 using an Olympus CX41 microscope with phase contrast optics and photographed using a Nikon Eclipse Ni-U microscope with DIC optics and a Nikon DS-Fi2 camera. The holotype is deposited in the Herbarium of Universidade Federal de Pernambuco, Recife, Brazil (URM).

Taxonomy

Castanediella diversispora P.M.O. Costa, Malosso & R.F. Castañeda, **sp. nov.**

MycoBank MB824478 Figs 1, 2

Differs from *Castanediella cagnizarii* by its conidia that are 1–3-septate with scolecospore-like shape.

Type: Brazil, Pernambuco, Igarassú, RPPN Refúgio Ecológico Charles Darwin, 7°48′S 34°57′W, on decaying leaves of an unidentified plant, 12.V.2017, coll. P.M.O. Costa (**Holotype**, URM 90135).

Etymology: Latin, *diversi-*, means diverse, varied, or different + *-spora*, referring to the conidia.

Conidiomata on the natural substrate sporodochia, scattered, sometimes coalescent amphigenous, slightly pulvinate, yellowish-white or white. Mycelium mostly superficial, composed of septate, branched, pale brown or brown, smooth-walled hyphae, 1–2.5 µm diam. Conidiophores micronematous or semi-macronematous erect, forming a compact cluster, pale brown to brown, smooth-walled. Conidiogenous cells polyblastic, discrete, sympodial, minutely denticulate at the inflated apex, arising terminally and laterally from the superficial hyphae, pale brown to brown, smooth-walled, 4–9 × 2–3.5 µm. Conidial secession schizolytic. Conidia solitary, acrogenous, hyaline, smooth-walled, exhibiting three different conidial morphologies: i) cylindrical, slightly uncinate at the ends, straight, 1-septate, 11.5–16 × 2 µm; ii) cylindrical to slightly subacerose, slightly uncinate at the apex, abruptly attenuated at the base, straight, 1-septate, 19.5–25 ×

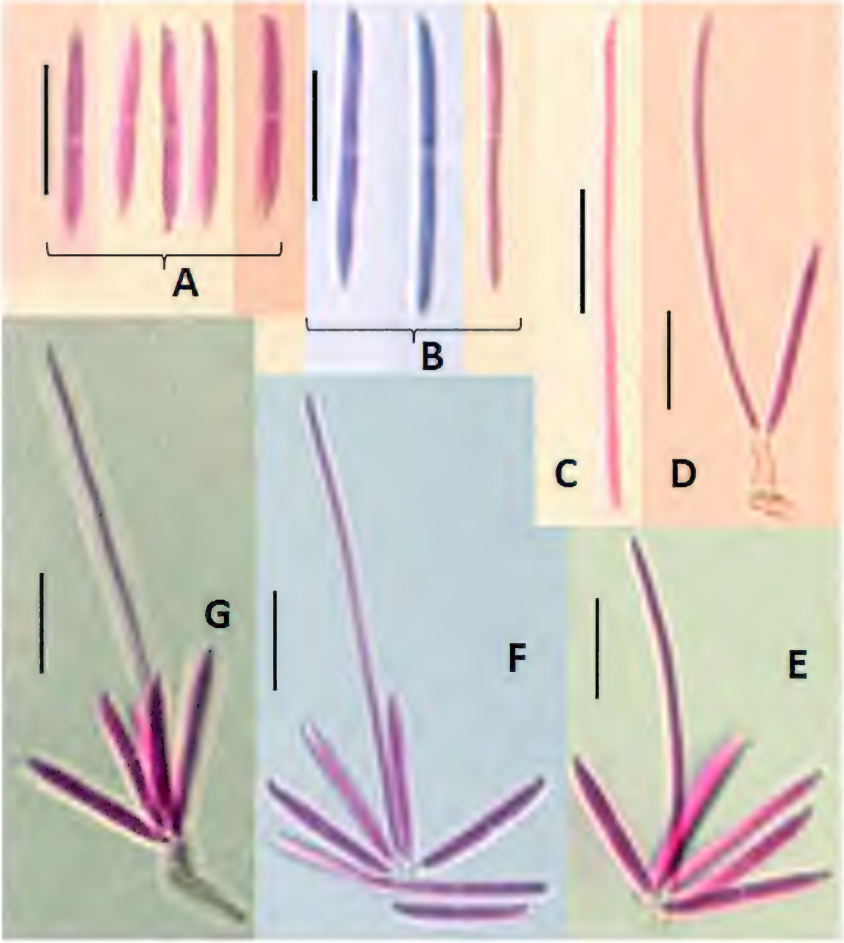

Fig 1. *Castanediella diversispora* (ex holotype, URM 90135). A–C. Conidia. D. Conidiogenous cell and conidia. E–G. Fascicles containing one long filiform conidium. Scale bars = 10 µm.

1.5–2 µm; iii) long filiform, obtuse or rounded at the apex attenuated at the base, straight or curved, 1–3-septate, 28.5–47 × 1 µm.

Notes: Crous & al. (2015a) established the genus *Castanediella* Hern.-Restr. & al., typified by *C. acaciae;* its nine other species are *C. cagnizarii, C. communis, C. couratarii, C. eucalypti, C. eucalypticola, C. eucalyptigena, C. hyalopenicillata, C. malaysiana,* and *C. ramosa* (Crous & al. 2015a,b, 2016, 2017; Crous & Wingfield 2016; Hernández-Restrepo & al. 2016a,b). The

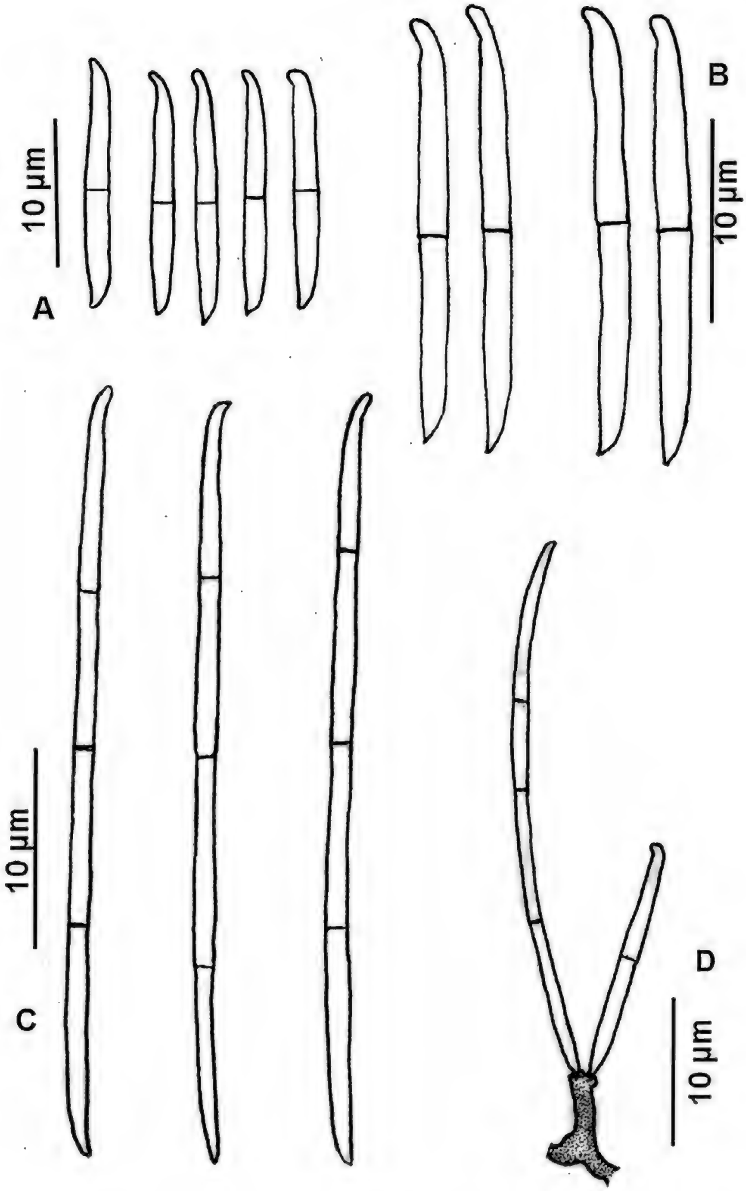

Fig 2. *Castanediella diversispora* (ex holotype, URM 90135), A. Cylindrical conidia with uncinate ends. B. Cylindrical to subacerose conidia with uncinate apex and attenuated base. C. Long filiform conidia with obtuse apex and attenuated base. D. Conidiogenous cell and conidia.

genus *Castanediella* is distinguished by conidiomata that are sporodochial, scattered, sometimes coalescent, pulvinate, punctate or rudimentary, white to yellow, and composed of branched, compact, penicillate, pale brown or brown conidiophores with conidiogenous cells that are polyblastic, sympodial cylindrical, lageniform or subulate, terminal or discrete, and denticulate (usually with numerous inconspicuous teeth at the inflated apex). The conidia are falcate, lunate, subcylindrical, fusiform or clavate, unicellular or septate, hyaline, and smooth.

Castanediella diversispora resembles *C. cagnizarii* (R.F. Castañeda & W.B. Kendr.) Crous & al., which differs by its (0–)1-septate, cylindrical or fusiform conidia that are usually curved at both ends, with two sizes: 12–17 × 1.5–2 µm and 21–25 × 1.5–2 µm (Castañeda-Ruiz & Kendrick 1991).

Key to *Castanediella* species

1. Conidia falcate or lunate 2
1. Conidia not as above 9

2. Conidia always 0-septate 3
2. Conidia 0–3-septate 7

3. Conidiophores branched 4
3. Conidiophores unbranched 5

4. Chlamydospores absent; conidia falcate with subobtuse ends, biguttulate,
    8–12 × 1.5–2 µm .... *C. acaciae*
4. Chlamydospores globose, brown, 4–10 µm diam, forming in chains;
    conidia falcate with subobtuse ends, guttulate,
    (13–)17–20(–22) × 2–3 µm .... *C. communis*

5. Conidiophores frequently reduced to conidiogenous cells,
    conidia falcate with subobtusely rounded acute ends, biguttulate,
    (13–)18–24(–30) × 2(–2.5) µm, aggregated in mucoid clusters .. *C. eucalyptigena*
5. Conidiophores not reduced to conidiogenous cells 6

6. Conidia falcate with subobtuse apex and truncate base, biguttulate,
    (15–)20–26(–30) × 2.5–3 µm .... *C. eucalypticola*
6. Conidia falcate with two subobtuse ends,
    (15–)18– 21(–23) × 2–3 µm .... *C. eucalypti*

7. Chlamydospores absent, conidia falcate to lunate, 18–30 × 2–3 µm ... *C. malaysiana*
7. Chlamydospores present 8

8. Chlamydospores globose or subglobose, intercalary or in branched chains, brown,
    conidia lunate, 0(–1)-septate, 10–22 × 1.5–2.5 µm .... *C. couratarii*
8. Chlamydospores elliptical or globose, brown,
    conidia falcate, (0–)1(–3)-septate, 26–44 × 2–3 µm .... *C. ramosa*

9. Conidia uniform in shape and size: cylindrical, subacerose to fusiform,
apex obtuse, base pointed, 0–1-septate, 14–24 × 2–3 µm .... *C. hyalopenicillata*
9. Conidia not uniform in shape and size 10

10. Conidia cylindrical or fusiform, usually 1-septate and curved at both ends
(apex sometimes obtuse), of two sizes: 12–17 × 1.5–2 µm
and 21–25 × 1.5–2 µm .... *C. cagnizarii*
10. Conidia in three shapes and sizes, i) cylindrical, 1-septate, 11.5–16 × 2 µm;
ii) cylindrical to slightly subacerose, 1-septate, 19.5–25 × 1.5–2 µm;
iii) long filiform, 1–3-septate, 28.5–47 × 1 µm .... *C. diversispora*

Acknowledgments

The authors express their sincere gratitude to Dr. Margarita Hernández-Restrepo and Dr. De-Wei Li for their critical review of the manuscript. The authors are grateful to Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) for financial support (Project 88881.062172/2014-01) and Programa Ciência sem Fronteiras. RFCR is grateful to the Cuban Ministry of Agriculture for facilities. DS is grateful to the Escuela Superior Politécnica del Litoral (ESPOL), CIBE, for financial support. We acknowledge the websites provided by Dr. P.M. Kirk (Index Fungorum) and Drs. V. Robert and K. Bensch (MycoBank). Dr. Lorelei Norvell's editorial review and Dr. Shaun Pennycook's nomenclature review are greatly appreciated.

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